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ABSTRACT

The relationship between school size and students' achievement in reading and mathematics by school level and gender was studied in order to illuminate issues of school size and equity and alternatives such as school-within-a-school plans. Data on 251,049 students from kindergarten through 12th grade were collected from 291 elementary, middle, and high schools in an urban Texas district. Correlations between academic achievement and school size were determined. For minority students, the effects of school size were mixed, with positive correlations for some groups at some levels that were not sustained at other levels. Findings do show that female students are negatively affected by school size in reading and mathematics at elementary, middle, and high school levels, while negative impact on males is only seen at the high school level. Previous research and the findings of this study suggest that smaller school sizes and smaller class sizes help educators understand and work with their students. (Contains 4 tables and 55 references.) (SLD)

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A STUDY ON THE RELATIONSHIP BETWEEN STUDENTS' ACHIEVEMENT, SCHOOL SIZE AND GENDER

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A Study on the Relationship Between Students' Achievement, School Size and Gender

The Purpose of the Study

The purpose of this study is to investigate the relationship between school size and students' achievement in reading and mathematics by school level and gender based on the results and recommendations of previous research. Since few school practices appear to have the promise to move schools in three simultaneous directions of achievement, responsiveness, and equity that small school size does (Galletti, 1999), we must continue to investigate the impact that large schools have on students. The findings of this study will provide information for understanding and examining the relationship between school size and student achievement in terms of gender.

Background

In 1964, Roger Barker and Paul Gump, in their book, Big School, Small School, summarized hundreds of studies that concluded small schools are better than large schools. Since then, the evidence has continued to grow, and today a vast majority of research has concluded that small schools are indeed superior to larger schools in terms of student achievement (Bates, 1993; Eberts, Kehoe, and Stone 1982; Eichenstein, 1994; Fowler and Walberg, 1991; Kershaw and Blank, 1993; Miller, Ellsworth, and Howell 1986; Robinson-Lewis 1991; Walberg, 1992).

The benefits of smaller schools and student achievement have been investigated from a number of perspectives over the years including student achievement, attendance rates, as well as self-concept and other behavior measures. But, few studies have demonstrated whether or not the effects investigated are related to gender differences.

In considering the achievement rates of adolescent females, researchers have accumulated evidence which points to many barriers to female success and the well documented adolescent plunge." According to Sutler (1978), females are faced with the real or perceived choices of popularity versus high achievement; and, conformity and group acceptance versus the relative isolation of academic acceleration. If smaller schools and school within a school (SWAS) plans have the potential to create smaller more personalized learning environments with enriched interpersonal relationships, it can be assumed that females would be less compelled towards

popularity and conformity and consequently attain higher achievement scores. This raises an important question that this paper attempts to address; do females attain higher achievement scores in smaller schools?

School Size

Research in the area of small schools points to the fact that smaller schools improve student achievement and that the effects are most profound with ethnic minority students and students of low socioeconomic status (Berlin and Cienkus 1989; Eberts, Kehoe, and Stone 1982; Fowler, 1995; Friedkin and Necochea 1988; Howley, 1994, 1995; Huang and Howley, 1993; Jewell 1989; Miller, Ellsworth, and Howell 1986; Rutter 1988; Stockard and Mayberry 1992). Robinson and Wittebols (1986) have also found that the clearest evidence of positive effects from smaller schools is in the primary grades for disadvantaged and minority students.

Although the professional literature supports educating children in small schools, consolidation trends continue to create large schools. This is because factors other than student results such as political, economic, social and demographic factors typically drive decisions about school size (Cotton, 1996). Between 1940 and 1990 for example, the total number of elementary and secondary public schools declined 69 percent — from approximately 200,000 to 62,037— despite a 70 percent increase in the U.S. population (Walberg, 1992; Howley, 1994).

The most cited reason for the continuing trend of large schools is financial constraints. A report from the federal government's General Accounting Office estimates that schools in the Unites States need $112 billion to upgrade or repair their facilities, noting that as many as one-third of all schools need either extensive repairs or complete replacement. These findings reflect the fact that one-third of the 110,000 schools in the country were built before World War II and only about 1 of 10 schools has been constructed since 1980. The same financial constraints that prevent us from reducing school size holds true to reducing class sizes. Sarason (1996, p.192) points out that even "if Congress in its infinite wisdom were to pass legislation making it financially possible to reduce class size in half, the legislation could no be implemented. It is conceivable that over a period of a decade the necessary physical plant could be built. What would

be impossible would be to train teachers and other education specialists in the numbers necessary to implement the legislation, especially if one employed more demanding criteria for selection that has been true in the past."

Other reasons for the continuing trend of building large schools and consolidating small schools (most of which have been disproved) include:

- The belief that larger schools provide a richer curricular, more instructional specialist and other student services;
- Taxpayers belief that larger schools are more economical;
- The 1957 launching of the Soviet space satellite Sputnik and the contemporary belief that that catching up with the Soviet Union required bigger schools that could produce more scientists (Smith and DeYoung);
- Compliance with school desegregation and special entitlement programs originating in the 1960s have resulted in additional school mergers (Smith and DeYoung);
- James Conant's 1959 book, *The American High School Today*, greatly accelerated the momentum of the school consolidation movement (Pittman and Haughwout, 1987; Stockard and Mayberry, 1992; Walberg, 1992; Williams, 1990);
- The belief that in order to be cost effective and to offer a sufficiently large and varied curriculum, a secondary school must have at least 100 students in its graduating class (Conant, 1959); and
- Conant's claim that the small high school was the number-one problem in education, and that its elimination should be a top priority (Conant, 1959).

For these reasons and others, educators, policymakers, and parents are now considering alternatives, such as school-within-a-school plans, to reduce school size in an effort to improve student achievement, foster more positive inter-personal relationships, and afford equal opportunities to all students.

School Within a School

SWAS arrangements are intended to mitigate the negative effects of large schools by organizing their students into smaller groups. Examples of SWAS plans as identified by Cawelti (1993) are vertical house plans, ninth grade house plans, special curriculum schools and charter schools.

In vertical house plans, students in grades 9-12, or 10-12, are assigned to groups of a few hundred students each within a large high school. Each house typically has its own discipline plan, parent involvement, student activity program, student government, and social activities.

In ninth grade houses, ninth graders have their own house within a large high school and have smaller classes. These students also receive specialized counseling that ease transition into high school.

Special curriculum schools are organized into houses based on special interests or needs. These schools are usually found at the secondary level although they are emerging at the elementary level as well.

Charter Schools are similar to special curriculum schools, except that the motivation for their creation comes from a group of teachers or parents who have organized them to respond to a particular interest of either the group or of the students.

SWAS plans are designed to create personalized learning environments. As the evidence would suggest, this is one solution to the problem of large, impersonal schools, fragmented schedules for children and teachers, and random assignments of students to teachers that cause many children to mentally and physically withdraw from learning. Research clearly indicates that small schools, or educational environments that take into account student's individual needs produce lasting benefits (Miller, 1996; and Lee, Smith & Croninger, 1996).

There are a number of case studies and evaluations of SWAS plans (e.g., Corcoran, 1989; Fouts, 1994; Morriseau, 1975; Moffett, 1981; Neufeld, 1993; Robinson-Lewis, 1991; Greenleaf, 1995). A number of studies on SWAS plans report improvement in attendance rates (Tompkins, 1988; Fouts, 1994; Corcoran, 1989; Aschbacher, 1991; Gordon, 1992; McMullan, et al., 1994)

decrease in dropout rates (D'Amico & Adelman, 1986; Dayton, 1987; Gordon, 1992) lowered suspension and disciplinary rates (Fouts, 1994) increases in self-concepts (Robinson-Lewis, 1991) and higher rates of satisfaction with the SWAS (Fouts, 1994; Gordon, 1992) and a higher affiliation with the school (Greenleaf, 1995). Research on student attitudes overwhelmingly favors small school over larger ones (Aptekar, 1983; Bates, 1993; Edington and Gardner, 1984; Fowler, 1995; Fowler and Walberg , 1991; Gregory, 1992; Gregory & Smith, 1983; Walberg, 1992).

Researchers have indicated that one reason for student success in smaller schools is due in part to the fact that students in small schools and units (SWAS) have higher quality interpersonal relations than are possible in larger schools (Fowler & Walberg, 1991; Rutter, 1988). This applies to interpersonal relationships between students, staff, and the communities, both individually and in combination. Another reason is that students are able to develop a sense of belonging, a culture that is frequently fostered in smaller schools. Research also reveals that students from smaller schools experience a much greater sense of belonging than their counterparts in larger schools (Fowler & Walberg, 1991; Gregory, 1992; Stockard & Mayberry, 1992).

These SWAS plans have all been designed to reap the benefits identified through the investigation of smaller schools. Most of these investigations have looked at the effects of school size on student variables such as performance, attitude, and behavior measures. Studies have also researched the relationship of school size and ethnicity, socio-economic status, and other issues of equity. However, few studies have researched the relationship between school size and student achievement in terms of gender.

Gender

The American Association of University Women's 1991 study indicates a marked drop in girl's self esteem between the ages of 11 and 15 (AAUW, 1991). During this same time in the life of a young girl, peer relationships become prominent and a shift from achievement to social acceptance and love begins (Groth, 1969). Sadker and Sadker (1982) found that while male and female achievement scores are nearly equal at the age of 9, by 13 a decline in achievement of females occurs. While females are outspoken and confident as children, by the age of 11 they lose

confidence in themselves, their looks, and their abilities (Rogers & Gilligan, 1988). This research parallels Kilne and Short's (1991) findings that report a progressive decline in self-perceived abilities and confidence and a decline in the perception that others value their abilities. A decline in the achievement of females is evident in academic test scores, course choices, and other academic goals (Kerr, 1997).

Understanding and exploring the relationship between school size, student achievement, and gender is important if educators, policy makers and researchers are to consider addressing the issue of school size and equity via alternatives such as SWAS plans.

Methods

Subjects

Data on a total of 251,049 students from kindergarten through twelfth grade were collected from 291 schools (191 elementary schools, 57 middle schools and 43 high schools) in a large urban school district located in Texas, with school sizes ranging form 16 to 3,969. From this working sample, a total of 94,480 students (39,484 elementary, 42,593 middle, and 12,401 high school students), see **Table 1**, had sufficient information for analysis. This information included reading and math achievement scores, as well as gender, grade and ethnicity codes.

Insert Table 1. (Gender and Ethnicity Cases of Sample) about here.

Data Collection and Analysis

Data were obtained from the state's Public Education Information Management System (PEIMS). This system is used to collect campus as well as district level student information for electronic submission to the state education agency.

Partial r correlations were used to analyze the relationship between students' achievement and school size. Correlations were run by school level, by school level and gender and by school level and ethnicity. The control variable was socio-economic status (SES) which was determined by student participation in the federal government's free and reduced lunch program.

The predictor variables included student's grade, gender, ethnicity and schools size (number of students). The criterion variables were reading and math scores on the Texas Assessment of Academic Skills (TAAS) test. The TAAS measures students understanding of the statewide curriculum in reading and mathematics at grades 3 through 8 and the exit level; in writing in grades 4, 8, and the exit level; and in science and social studies at grade 8. Only scores in reading and mathematics at grades 3 through 8 and 10 were used.

Results

Table 2 shows that there was a statistically non-significant negative correlation in reading and mathematic achievement scores when correlated with school size (-0.0073 and –0.006, respectively) at the elementary level. The opposite, however is true at the middle school level. Table 2 shows that there is a statistically significant positive correlation in reading and mathematic achievement scores at the middle school levels in both reading and mathematics when correlated with school size (0.0124, P<.05and 0.0184, P<.01 respectively). Finally, table 2 shows that there is a statistically significant negative correlation in reading and mathematic achievement scores when correlated with school size at the high school level (-0.0986, P<.01 and –0.0259, P<.05, respectively).

Insert Table 2. (Partial correlation between school size and achievement by school level) about here

When TAAS TLI scores in reading and mathematics are compared by school level, by gender these findings are mixed. **Table 3** shows that there is a statistically non-significant negative correlation in reading and mathematic achievement scores when correlated with school size for females (-0.0231 and –0.0226, respectively) at the elementary level.

Table 3 also shows a statistically significant negative correlation in reading and a statistically non-significant negative correlation in mathematics when correlated with school size for females (-0.016, P<.05 and –0.0080) at the middle school level. Male students show a

statistically significant positive correlation in reading and mathematics when correlated with school size (0.0317, P<.01and 0.0374, P<.01) at the middle school level.

Table 3 also shows a statistically significant negative correlation in reading and mathematics when correlated with school size for females (-0.1109, P<.01 and –0.0323, P<.05) at the high school level. Male students show a statistically significant negative correlation in reading and a statistically non-significant negative correlation when correlated with school size (-0.0827, P<.01and -0.0276) at the high school level.

Insert Table 3 (Partial correlation between school size and achievement by school level and gender) about here.

Table 4 shows a statistically significant negative correlations in both reading and mathematics at the elementary level for Asians (-0.01867, P<.01 and –0.2017, P<.01, respectively), African Americans showed a statistically non-significant negative correlation in reading (-0.0154) and a statistically significant negative correlation in mathematics (–0.0238, P<.01) , and Whites showed statistically significant negative correlations in both reading and mathematics (-0.0595, P<.01 and –0.0571, P<.01, respectively). Hispanics however, showed a statistically significant positive correlation in both reading and mathematics (0.0427, P<.01 and 0.20485, P<.01, respectively).

Table 4 also shows statistically significant negative correlations in reading and mathematics at the middle school level for Asians (-0.0896, P<.01 and –0.0574, P<.05, respectively), and Hispanics (-0.0218, P<.01 and -0.0213, P<.01). African Americans, however, showed a statistically significant positive correlation in reading and mathematics (0.0412, P<.01 and 0.0318, P<.01), as did Whites (0.0350, P<.05 and 0.0391, P<.01).

Insert Table 4. (Partial correlation between school size and achievement by school level and ethnicity

Finally, **Table 4** shows a statistically significant negative correlations in reading and mathematics at the high school level for Asians (-0.2002, P<.01 and –0.1306, P<.01, respectively), and Hispanics (-0.1175, P<.01 and -0.0648, P<.01). African Americans, however, showed a

statistically non-significant positive correlation in reading (0.0095) and a statistically non-significant negative correlation in mathematics (-0.0092). Whites had a statistically non-significant positive correlation in both reading and mathematics (0.0067 and 0.0317).

Discussion

Our research finds that the effects of school size, in terms of minority students, is mixed. At the elementary level, student achievement in reading and mathematics is negatively correlated with school size for Asians, African Americans and Whites but positively correlated for Hispanics. At the middle school level, student achievement in reading and mathematics is negatively correlated with school size for Asians and Hispanics and positively correlated for African Americans and Whites. Finally, at the high school level our research finds that student achievement in reading and mathematics is negatively correlated with school size for Asians, and Hispanics, and only in mathematics for African Americans. Furthermore, student achievement is positively correlated with school size for Whites in reading and mathematics and for African Americans in reading.

The impact of school size on student achievement in reading and mathematics when correlated by gender, however, paints a different picture. Our research indicates that females are negatively impacted by school size in reading and mathematics at the elementary, middle and high school level and males are negatively impacted only at the high school level. This is a very important finding, especially when we look at how issues of school size are currently being addressed.

Research in the area of small schools points to the fact that smaller schools improve student achievement and that the effects are most profound with ethnic minority students and students of low socioeconomic status (Berlin and Cienkus 1989; Eberts, Kehoe, and Stone 1982; Fowler, 1995; Friedkin and Necochea 1988; Howley, 1994, 1995; Huang and Howley, 1993; Jewell 1989; Miller, Ellsworth, and Howell 1986; Rutter 1988; Stockard and Mayberry 1992). Further research should be conducted to determine if females should be added to this list.

As mentioned earlier, educators, policymakers, and parents are now considering alternatives, such as school-within-a-school (SWAS) plans, to reduce size and thus improve student achievement, foster more positive relationships, and afford equal opportunities to all students. What is important to note here, is that, it is not the reduction of school or class size that is important, but the relationships that are being fostered in these smaller environments.

Raywid, (1990a) reports the failure of one SWAS because of its inability to build upon the relationships within the program. The particular program he reports on was targeted for at-risk students and giving its own separate, well defined space and student complement, two important ingredients in a SWAS. However, instead of pursuing extended teacher roles in the interest of fuller student-teacher relationships, a social worker was hired to meet with the students regularly. Further undermining the possibility of expanded teacher-student relationships was the full-time assignment of only one teacher to the program, while the rest of the assigned teachers only taught one course.

> *"At the heart of the matter is the interrelationship between climate and academic programming...The strengths of the schools are their well-focused academic programs and their capacity to engage students and teachers in dialogue that reaches beyond the formality and rigidity of roles into reality of individual lives; in other words, to foster creative human relationships" (Foley & McConnaught, 1982, p. ii; Foley & Crull, 1984 p. 53).*

Researchers have suggested that smaller classes are friendlier places where students have the opportunity to develop better relationships with their classmates and their teachers which in turn encourages students to become more engaged in extracurricular activities and in classroom learning activities. When we consider this, in light of our findings, one could assume that this is especially true for females since their achievement in reading and mathematics is impacted across all three grade levels. While females typically do very well academically in the early elementary years, they tend to lose ground to males at the time roughly corresponding to female puberty. For example, although research has shown that females do not necessarily view science and math less favorably than their male peers (Rennie and Dunn., 1994), a marked decline in females' academic

achievement in these disciplines, in comparison to males, begins in seventh grade and continues to fall in high school (Blake, 1993); Schmuck and Schmuck, 1994). Several studies have concluded that this phenomenon is the result of schools failing to provide environments conducive to females' learning (Baker and Leary, 1995). One way of creating environments conducive to female learning may be found in reduced school sizes or the creation of SWAS plans.

Conclusion

The limitations of our study are inescapable. With such a large number of cases, it is possible to find any correlation one desires. However, the correlations we found are neither by chance nor due to design. They indicate that a difference in achievement between males and females does exist when correlated with school size. Furthermore, it is plausible that with a smaller sample size we could have expected to see much larger variances in the data.

Still, our findings indicate that the effects of school size have the biggest impact on females. For this reason, studies that investigate the relationship between school size and student achievement must control for gender to determine the impact that gender plays in the analysis of the data. Without a conscious effort to determine the impact of school environments on female students, we will continue to create learning environments that are not conducive to learning for approximately half of our entire student population.

In the creation of SWAS plans, educators must understand that we are not advocating the idea that smaller schools or smaller class sizes will increase student achievement. We are advocating the fact that smaller school sizes and smaller class sizes will allow educators to better understand their students and therefore help them to personalize the learning environments for each and every one of their students. When creating personalized learning environments, educators must develop personal relationships with their students that transcend the normal educator – student relationship.

Table 1. Gender and Ethnicity Cases of Sample

Gender	Cases	Ethnicity	Cases
Female	47,163	Asian	3,013
Male	47,234	African American	35,160
		Hispanics	44,109
		White	11,337

N=94,480 cases

Table 2. Partial correlation between school size and achievement by school level

	TAAS Reading		TAAS Math	
School Level	Partial r (School Size)	p	Partial r (School Size)	p
Elementary	-0.0073		-0.006	
Middle	0.0124	*	0.0184	**
High	-0.0986	**	-0.0259	*

* P<.05; ** P<.01.

Table 3. Partial correlation between school size and achievement by school level and gender

		TAAS Reading		TAAS Math	
School Level	Gender	Partial r (School Size)	p	Partial r (School Size)	p
Elementary	Female	-0.0231	**	-0.0226	**
	Male	0.004		0.0071	
Middle	Female	-0.016	*	-0.0080	
	Male	0.0317	**	0.0374	**
High	Female	-0.1109	**	-0.0323	*
	Male	-0.0827	**	-0.0276	

* P<.05; ** P<.01.

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Table 4. Partial correlation between school size and achievement by school level and ethnicity

School Level	Ethnicity	TAAS Reading Partial r (School Size)	p	TAAS Math Partial r (School Size)	p
Elementary					
	Asian	-0.1867	**	-0.2017	**
	African American	-0.0154		-0.0238	**
	Hispanic	0.0427	**	0.0485	**
	White	-0.0595	**	-0.0571	**
Middle					
	Asian	-0.0896	**	-0.0574	*
	African American	0.0412	**	0.0318	**
	Hispanic	-0.0218	**	-0.0213	**
	White	0.0350	*	0.0391	**
High					
	Asian	-0.2002	**	-0.1306	**
	African American	0.0095		-0.0092	
	Hispanic	-0.1175	**	-0.0648	**
	White	0.0067		0.0317	

* P<.05; ** P<.01.

References

American Association for University Women (1991). Shortchanging females, shortchanging America. Washington, D.D.: AAUW

Aptekar, L.S. (1983). Mexican-American high school students' perception of school. Adolescence, 18.

Aschbacker, P.R. (1991, April). *Effects of restructuring on disadvantaged students: Humanitas--A case study*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Baker, D. and Leary R. (1995). Letting girls speak out about science. Journal of Research in Science Teaching, 32:1.

Barker, R.G., & Gump, P.V. (1964). *Big school, small school*. Stanford, CA: Stanford University Press.

Berlin, B. M., & Cienkus, R. c. (1989). Size: the ultimate educational issue? Education and Urban Society, 21.

Blake, S. (1993). Are you turning female and minority students away from science? Science and Children, 30:4.

Corcoran, T.B. (1989). Restructuring education: A new vision at Hope Essential High School. In J.M. Rosow & R. Zager (Eds.), *Allies in educational reform* (pp.243-274). San Francisco: Jossey-Bass.

Cotton, K. (1996). School size, school climate, and student performance. Close-up #20. Portland, OR:Northwest Regional Educational Laboratory.

D'Amico, J.J., & Adelman, S.P. (1986, April). *Throwing the baby out with the bathwater: The impact of curriculum and promotion requirements on a successful business education program*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Dayton, C. (1987). *Peninsula academies replications: 1985-86 evaluation report*. Berkeley, CA: PolicyAnalysis for California Education.

Eberts, R.W. Kehoe, E., & Stone, J.A. (1984). The effects of school size on student outcomes. Eugene, OR: Oregon Universtiy.

Foley, E.M., & Crull, P. (1984). *Educating the at-risk adolescent: More lessons from alternative high schools*. New York, NY: Public Education Association.

Foley, E.M., & McConnaughy, S.B. (1982). *Towards school improvement: Lessons from alternative high schools*. New York, NY: Public Education Association.

Fouts, J. (1994). *A school within a school: Evaluation results of the first year of a restructuring effort*. Seattle, WA: Seattle Pacific University, School of Education.

Fowler, W. J., Jr. (1995). School size and student outcomes. In H. J. Walberg (Series Ed.), & B. Levin, W. J. Fowler, Jr., & H. J. Walberg (Vol. Eds.), Advances in Educational Productivity: Vol. 5. Organizational Influences on Educational Productivity (pp. 3-25). Greenwich, CT: JAI Press, Inc.

Fowler, W. J., Jr., & Walberg, H. J. (1991). School size, characteristics, and outcomes. Educational Evaluation and Policy Analysis, 13(2), 189-202.

Friedkin, N. E. & Necochea, J. (1988). School system size and performance: a contingency perspective . Educational Evaluation and Policy Analysis, 10.

Groth, N.J. (1969). Vocational development for gifted females. ERIC Document Reproduction Service No. ED 931 747.

Goodlad, J.I. (1984). *A place called school: Prospects for the future*. New York, NY: McGraw Hill.

Gordon, R. (1992). *School within a school, grades 7, 8, 9, 10. Focus on program evaluation*. Des Moines, IA: Des Moines Public Schools.

Kerr, B. A.(1997). Developing talents in girls and young women. In N. Colangelo & G. A. Davis (Eds.), Handbook of gifted education. Boston, MA:Allyn and Bacon.

Kline, B.E and Short, E.B. (1991). Changes in emotional resilience: Gifted adolescent females. Roeper Review 13:3.

Lee, V. E., and Smith, J. B. (1996). High school size: Which works best, and for whom? Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.

Lee, V.E., & Smith, J.B. (1993, July). Effects of school restructuring on the achievement and engagement of middle-grade students. *Sociology of Education*, 66(3), 164-187.

Lee, V.E., & Smith, J.B. (1994). *Effects of high school restructuring and size on gains in achievement and engagement for early secondary school students*. Madison, WI: University of Wisconsin, Center on Organization and Restructuring of Schools.

Lee, V.E., & Smith, J.B. (1995). *Collective responsibility for learning and its effects on gains in achievement for early secondary school students*. Madison, WI: University of Wisconsin, Center on Organization and Restructuring of Schools.

BEST COPY AVAILABLE

Lee, V.E., Smith, J.B., & Croninger, R.G. (1995). *Understanding high school restructuring effects on the equitable distribution of learning in mathematics and science*. Madison, WI: University of Wisconsin, Center on Organization and Restructuring of Schools.

McMullan, B.J., & Wolf, W.C. (1991, November). *The Philadelphia schools collaborative: An assessment of its first three years*. Philadelphia, PA: Center for Assessment and Policy Development.

McMullan, B.J., Sipe, C.L., & Wolf, W.C. (1994, March). *Charter and student achievement: Early evidence from school restructuring in Philadelphia*. Philadelphia, PA: Center for Assessment and Policy Development.

Meier, D. (1995). *The power of their ideas: Lessons for America from a small school in Harlem*. Boston, MA: Beacon Press.

Miller, J.W., Ellsworht, R. and Howell, J. (1986). Public elementary schools which deviate from the traditional SES-achievement relationship. Educational Research Quarterly, 10.

Moffett, J.J. (1981). *Options in secondary education: The school within a school concept*. Doctoral dissertation, University of Arizona, Tucson, AZ.

Morrisseau, J.J. (1975). *The mini-school experiment. Restructuring your school. A handbook*. New York, NY: New York Urban Coalition.

Neufeld, B. (1993, March). *The core program at Weaver High School: Teachers in transition. Final report*. Cambridge, MA: Education Matters, Inc.

Pittman, R.B., & Haughwout, P. (1987, Winter). Influence of high school size on dropout rate. *Educational Evaluation and Policy Analysis*, 9(4), 337-343.

Plath, K.R. (1965). *Schools within schools: A study of high school organization*. New York, NY:
Raywid, M.A. (1990a). *Evaluation of the alternative learning program at [name of high school]*. Hempstead, NY: Hofstra University, Center for the Study of Educational Alternatives.

Raywid, M.A. (1990b, Summer). Successful schools of choice: Cottage industry benefits in large systems. *Educational Policy*, 4(2), 93-108.

Raywid, M. A. (1985). Family choice arrangements in public schools: A review of the literature. Review of Educational Research, 55(4), 435-467.

Raywid, M.A. (1994). *Focus schools: A genre to consider*. Urban Diversity Series No. 106. New York, NY: Teachers College, ERIC Clearinghouse on Urban Education.

Raywid, M.A. (1995a, April). *Mapping progress toward restructuring: One school's story*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Raywid, M.A. (1995b). Alternatives and marginal students. In M.C. Wang & M.C. Reynolds (Eds.), *Making a difference for students at risk: Trends and alternatives* (pp.119-155). Thousand Oaks, CA: Corwin Press.

Raywid, M.A. (1996). The Wadleigh complex: A dream that soured. In W. Boyd, R. Crowson, & H. Mawhinney (Eds.), *The politics of education and the new institutionalism: Reinventing the American school*. Philadelphia: Falmer Press.

Raywid, M.A., & Baker, T.L. (1993). Patterns of constraint and opportunity: The policy environments of three coalition schools. In S. Bacharach & R. Ogawa (Eds.), *Advances in research and theory of school management and educational policy* (Vol. III, pp.159-185). Greenwich, CT: JAI Press.

Rennie, L.J. and Dunn, M. (1994). Gender, ethnicity and students' perceptions about science and science-related careers in Fiji. Science Education 78:3.

Robinson-Lewis, G. (1991). *Summative evaluation of the school-within-a-school (SWAS) program*: 1988-1989, 1989-1990, 1990-1991. Kansas City, MO: Kansas City School District, Mo.

Rogers, A. and Gilligan, C. (1988). Translating girls voices: Two languages of development. Cambridge, MA: Harvard University Graduate School oEducation Project on th ePsychology of Women and the Development of Girls.

Rutter, R. A. (1988). Effects of school as a community. Madison, WI: National Center on Effective Secondary Schools. (ERIC Document Reproduction Service No. ED 313 470)

Sadker, P.S. and Sadker, D. (1982). Sex equity handbook for schools. New York: Longman, Inc.

Schmuck, P.A. and Schmuck, R. A. (1994). Gender equity: A critical democratic component of America's high schools. NASSP Bulletin 78:558.

Sarason, S.B. (1971). *The culture of the school and the problem of change*. Boston: Allyn & Bacon.

Tompkins, J. (1988). *Dropout prevention programs, 1987-88. Report of evaluation*. Des Moines, IA: Des Moines Public Schools.

Walberg, H. J. (1992). On local control: Is bigger better? In source book on school and district size, cost, and quality. (ERIC Document No. ED 361 164)

Walton, M. (1991, October 6). Taking a new course. *Philadelphia Inquirer Magazine*, pp.19, 22, 24-26, 28-32.

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